WE CLAIM:

1. A process for the fluid catalytic cracking of mixed feedstocks of hydrocarbon feeds from different sources, in a riser reactor and in the presence of a zeolitic catalyst, under cracking conditions and in the absence of added hydrogen, for obtaining mainly light products such as LPG, said mixed feeds comprising feeds A and B, with feed B being more refractory to cracking, wherein said process comprises the segregated injection of said feeds A and B in distinct riser locations, and wherein:
   a) feed B is in an amount of from 5% and 50% by mass based on the total processed feed;
   b) the injection location of feed A sets the base of the riser reactive section;
   d) feed B is injected in one or more riser locations downstream the injection location of feed A and shows, in combination:
   i) higher coke selectivity relative to feed A; and
   ii) higher contaminant content,

and where the injection conditions of feed B involve:
   i) injection location between 10% and 80% of the total length of the riser reactive section;
   ii) improved dispersion; and
   iii) injection temperature equal or higher to the injection temperature of feed A,

the LPG resulting from such cracking process being recovered in higher amount than that obtained if feeds A and B were injected both in the base of the riser reactive section.

2. A process according to claim 1, wherein feed A is a heavy distillation gasoil (HVGO).
3. A process according to claim 1, wherein feed B is produced by a thermal or by a physical separation process.
4. A process according to claim 3, wherein feed B is produced by a pyrolysis, delayed coking and shale oil retorting process.

5. A process according to claim 1, wherein the contaminants of feed B comprise total nitrogen, nickel and polyaromatics.
6. A process according to claim 1, wherein the process conditions involve absence of overall sensible quenching effect resulting from feed B.
7. A process according to claim 1, wherein feed A is injected in a location of the base of the riser reactive section so as to have a longer contact time with the catalyst suspension, whereby the conversion into valuable products is increased.
8. A process according to claim 1, wherein the injection of feed B in the riser occurs downstream of the injection location of feed A, in the section comprised of from 25% and 50% of the riser reactive section.
9. A process according to claim 1, wherein the injection location of feed B of lower crackability is defined aiming at obtaining the maximum possible LPG production, and depends on the properties of the processed feeds of different crackability, on the percentage of the feed of lower crackability processed based on the overall feed flow rate and on the riser outlet reaction temperature.
10. A process according to claim 1, wherein the best location injection for feed B of lower crackability is that, which provides the ideal operation conditions for maximizing LPG yield in the riser section comprised between the two feed injections, while allowing the minimum residence time required for feed B of lower crackability to undergo the desired conversion into lighter products, including LPG.
11. A process according to claim 1, wherein the overall catalyst circulation rate is kept nearly constant during the cracking of feeds A and B.
12. A process according to claim 1, wherein the temperature rise in the riser section between the base of the reactive section and the downstream riser injection location causes in said section a huge feed conversion, so as to favor the yield in the sum of LPG and gasoline, by weight.
13. A process according to claim 1, wherein in the section between the downstream injection location and the riser top, feed B undergoes catalytic

cracking reactions without significantly increasing the coke content deposited on the catalyst.

14. A process according to claim 1, wherein the place of the one or more downstream locations should be selected so that the lower contact time is compensated by the optimization of the dispersion condition of feed B.

15. A process according to claim 1, wherein the same feed B is injected in more than one riser location.

16. A process according to claim 1, wherein different feeds B and C are injected in more than one riser location.

17. A process according to claim 1, wherein the temperature levels of the segregated portion of feed B are equal or higher than those of feed A injected in the base of the riser reactive section.

18. A process according to claim 1, wherein the injection of feeds A and B of different sources in the base of the riser reactive section and in the downstream riser location is carried out simultaneously.

19. A process according to claim 1, wherein the residence time of feed A in the riser submitted to the catalytic cracking reactions, measured between the injections of feed A and feed B, is in the range of from 0.5 and 2 seconds.

20. A process according to claim 1, wherein the temperature rise in the mixing region between feed A and the regenerated catalyst is of from 10°C to 50°C, provided by the injection of feed B in a riser location downstream of the injection location of feed A, and is in the range of from 520°C to 650°C.

21. A process according to claim 1, wherein the maximum temperature of feed B is 430°C.

22. A process according to claim 1, wherein the riser outlet reaction temperature is in the range of from 520°C to 590 °C.

23. A process according to claim 1, wherein the control system for the injection of feed B in the riser is completely independent of the variables of the FCC converter.

24. A process according to claim 1, wherein alternatively the control system for the injection of feed B in the riser is a function of the desired mixing temperature in the contact region of feed A with the regenerated catalyst.

25. A process according to claim 1, wherein alternatively the control system for the injection of feed B in the riser is a function of the LPG yield.

26. A process according to claim 1, wherein alternatively the control system for the injection of feed B in the riser is a function of any other variable which is desired to control and for this aim, any control logic may be used.

27. A process according to claim 1, wherein the flow of the reactive catalyst to oil mixture is upwards.

28. A process according to claim 1, wherein the flow of the reactive catalyst to oil mixture is downwards.

29. A process according to claim 1, wherein feed A is uniformly injected in the riser cross section by means of a plurality of highly efficient feed-injectors.

30..A process according to claim 1, wherein feed B is uniformly injected in the riser cross section by means of a plurality of highly efficient feed-injectors.

31. A process according to claim 1, wherein the catalyst comprises a Y zeolite.

32. A process according to claim 1, wherein the catalyst comprises a ZSM-5 zeolite.

33. A process according to claim 1, wherein the catalyst comprises a combination of Y and ZSM-5 zeolites in any amount.

34. A process according to claims 31, 32 and 33, wherein the zeolite catalysts comprise zeolites as additives.

35. A process according to claims 31, 32 and 33, wherein the zeolite catalysts comprise one zeolite as additive and the other one incorporated to the FCC catalyst.

36. A process according to claim 1, wherein the improved LPG yield results from the following conditions being obeyed:

i) the lower the crackability of feed B, the higher the time required for same to attain acceptable conversion levels;

ii) the higher the percentage of feed B based on the total processed feed, the higher the severity imposed to the cracking of feed A;

iii) the farther the injection location of feed B relative to the injection of feed A, the higher the time during which feed A will be submitted to the more severe cracking conditions that favor LPG yield;

iv) the higher the outlet riser reaction temperature, the higher will be the temperature at which feed A will be submitted to catalytic cracking.